

189

### YOUNG ADULTS BORN PRETERM WITH VERY-LOW-BIRTH-WEIGHT HAVE VISUAL PERCEPTUAL AND VISUO-MOTOR IMPAIRMENTS

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**Background and aims:** Visuo-motor and visual perceptual problems have been frequently reported in very low birth weight (VLBW: birth weight  $\leq 1500$  grams) children and adolescents, but few studies have assessed these skills in young adulthood. The aim of study was to examine whether young adults born with VLBW have more problems with visuo-motor integration, motor coordination and visual perception compared to controls.

**Methods:** 40 young adults with VLBW and 57 term born controls were examined at age 19-20 years. Visuo-motor skills were evaluated with the Developmental test of Visual-Motor Integration (VMI) and the Motor coordination test, and visual perceptual skills with the Motor-Free Visual Perception test (MVPT). Visual function was examined at age 14 years.

**Results:** VLBW subjects had significantly lower scores on VMI and the Motor coordination test compared with controls. They also had lower MVPT scores than controls, and one in three (34.1%) had visual perceptual problems, defined as  $< -1$ SD of the control mean. The visual perceptual problems were found in VLBW females only, who also had increased risk of visual perceptual impairments, defined as  $< -2$  SD of the control mean (Odds ratio 11.0; CI: 1.2-98.6). Subtasks affected were Visual Closure, Spatial Orientation and Complex Visual Discrimination. Correction for visual function influenced results, but did not remove group and sex differences.

**Conclusions:** Visuo-motor problems persisted into adulthood for VLBW subjects. A high proportion of VLBW females had a visual perceptual problem, indicating a possible sex difference in more complex visual perceptual abilities among VLBW subjects.

190

### YOUNG ADULTS BORN SMALL FOR GESTATIONAL AGE (SGA) AT TERM DEMONSTRATE WHITE MATTER DAMAGE ON BRAIN DTI

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**Background and aims:** SGA infants born at term have an increased risk of abnormal neurodevelopment with cognitive and learning disabilities. The aim of this study was to investigate whether being born term SGA leads to white matter damage that persists into early adulthood, and to examine the relationship between white matter integrity and perinatal data and IQ.

**Methods:** Forty-six SGA subjects and 59 controls with normal birth weight born at term were scanned at 1.5 T with DTI at ages 18-22. Voxelwise maps of fractional anisotropy (FA) were calculated. Tract-Based Spatial Statistics was carried out to test for voxelwise differences between groups. IQ was assessed with WAIS-III. The relationship between FA and perinatal data and total IQ, respectively were explored.

**Results:** In the SGA group reduced FA was found compared to the control group in the inferior long and short association tracts and in the external and internal capsule. Positive correlations were found between FA and birth weight and head circumference, and negative correlations were found between FA and duration of breast feeding (3 and 6 months) and IQ in the SGA group.

**Conclusions:** The reduced FA demonstrates that being born SGA results in long term white matter damage and compromised connectivity that might explain the abnormal neurodevelopmental deficits seen in SGA subjects. Low birth weight and reduced head circumference were associated with aberrant white matter connectivity in early adulthood, indicating that these are the most important factors determining the outcome of an SGA child.